

KIRTLANDIA[®]

THE CLEVELAND MUSEUM OF NATURAL HISTORY

CLEVELAND, OHIO

DECEMBER 1982

NUMBER 35

A SURVEY OF THE VERTEBRATES OF MORGAN SWAMP, ASHTABULA COUNTY, OHIO

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Abstract

A two-year inventory of transient and resident vertebrate species within a large swamp in northeastern Ohio was conducted during 1979 and 1980. Twenty-four species of fish, 26 species of amphibians and reptiles, 108 species of birds, and 24 species of mammals were recorded for the area during the time interval.

Introduction

Relatively few of the many bogs and swamps formerly distributed throughout northeastern Ohio remain unaltered. Most have been modified by draining or lumbering and then converted to pasture or other agricultural uses. One such wetland, Morgan Swamp, has experienced partial drainage, and its forests have dwindled through repeated cutting. Today this swamp persists as only a remnant of its original area (Hicks, 1933). Despite repeated man-caused perturbations and reductions in size it exhibits high plant species diversity and provides habitats and environmental conditions suitable for numerous species of threatened or endangered vascular plants and vertebrate animals.

Kirtlandia No. 35

0075-6245/82/1982-0035 \$2.00

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Description of Study Area

Morgan Swamp is located at 41° 38' 45" north latitude and 80° 53' 45" west longitude in west-central Ashtabula County (Fig. 1), the northeasternmost county in Ohio. Portions of the study area are found in four townships; Morgan, Trumbull, Rome, and Hartsgrove. The area consists of nearly 688 hectares of which approximately 405 hectares are marshland and forest; the remaining 283 hectares consists of old fields and agricultural lands.

Morgan Swamp lies to the west of the Grand River in the Grand River Valley at an elevation of about 247 meters above sea level. Soils of the area consist mostly of lacustrine deposits of clay and silt. The heavy soils and low relief of less than 6 meters create conditions conducive to the formation and maintenance of wetlands. Hicks (1933) provides a discussion of the soils, flora, and a brief history of the area up to the early 1930s.

A gravel road divides the area approximately into northern and southern halves. The area to the north consists of old fields and agricultural croplands, active gas wells, and residences along the western and northern perimeters with large expanses of wetlands, beaver ponds, and youthful secondary swamp forests exhibiting low plant species diversity. The area to the south is composed of youthful secondary swamp forests with low plant species diversity, few beaver ponds, a swamp forest approaching maturity with high plant species diversity, fields, and dwellings along the western and southern borders. The Grand River forms the eastern boundary for the entire study area. Portions of the area were logged within the last 15 years (Kumpulainen, personal communication), which accounts in part for the low species diversity on the north side of the road. An additional feature which merits description consists of debris from a demolished building located in the east central section of the study area. The remnants are localized in an old field and were found to provide refuge for several species of snakes which were not encountered elsewhere.

Within the swamplands and forests are myriad beaver ponds and meadows with lush stands of plants, such as, *Sphagnum sp.*, *Calla palustris*, *Nuphar advena*, *Anchistea virginica*, *Osmunda cinnamomea*, *Cephalanthus occidentalis*, *Viburnum recognitum*, and *Nyssa sylvatica*. The secondary forests are characterized by *Viburnum recognitum*, *Lindera benzoin*, *Populus grandidentata*, *Acer rubrum*, *Ulmus americana*, *Fraxinus americana*; numerous wildflowers, such as *Trillium grandiflorum*, *Trillium erectum*, *Hepatica acutiloba*, *Geranium maculatum*; and numerous species of *Viola*. On



FIG. 1. QUADRANGLE LOCATION

drier sites *Quercus borealis*, *Quercus alba*, *Liriodendron tulipifera*, *Trillium undulatum*, and *Dalibarda repens* grow.

An isolated stand of *Tsuga canadensis* forest persists, creating a restricted habitat characteristic of plant communities farther north. Otherwise hemlocks are confined to growing on the shallow ravine slopes or as scattered, isolated individuals throughout the secondary forest. The present *Tsuga* forest represents only a small remnant of the hemlock forest that originally covered about 40% of the 5 square mile area known as Morgan Swamp (Hicks, 1933).

Drainage for the study area is poor because of a flat topography and clay soils. Crooked Creek with its various branches provides drainage south to the Grand River for the western portion of the area. Several smaller unnamed streams course east or southeast and enter the Grand River directly. One small unnamed stream flows north and joins Trumbull Creek outside of the study area. All the drainage is to the Grand River and thus to Lake Erie (United States Geological Survey, 1970. East Trumbull Quadrangle, Ohio).

The bottom substrate of all ponds and small streams examined, except those of portions of Crooked Creek, consists of silts, clays, and detritis of varying depth. In deeper, slow-flowing portions of Crooked Creek the channel bottom materials also consist of silts and clays; however, rocks and gravels cover the bottom of stretches exhibiting swifter flow and frequently form riffles. Depths of the beaver ponds vary to approximately 2.5 meters but average between 0.6 meter and 1 meter. Crooked Creek varies in depth from several centimeters over riffles to more than 2 meters in the deepest pool.

Methods

Field work began in the early spring of 1979 and extended through the autumn of 1980. The fish species were sampled during the spring, summer, and fall of 1980 by using a dip-net (0.5 centimeter mesh) and a 4.6 meter seine 0.5 centimeter mesh. In addition, several species of fish were netted in 1979 while sampling for larval amphibians. Notes on the species captured and their relative abundance at the site were recorded. Specimens collected in the field were placed in 10% formalin and taken to the laboratory for sorting and identification.

Adult amphibians and reptiles were uncovered by overturning logs, boards, and other debris found on the soil and by actively searching each habitat repeatedly in different seasons and under varying weather conditions. The adults were captured by hand or dip-net, whereas amphibian larva were sampled by dip-netting or seining. Evening visits to the study area were made in the spring and early summer to search for amphibians at potential breeding sites.

Observations of avian species either observed visually or heard calling or singing during each visit to the study area were noted along with the number of individuals of each species. In order to obtain as complete a list as possible of the species of birds residing in or transient through the study area in such a brief period of time, considerable effort was directed to examining the diverse habitats for various species of birds, especially during the spring migratory period. Although a nesting survey was not conducted, those species observed to

be nesting in the area were noted but are not reported here.

The species of mammals found in the study area were determined primarily by trapping and visual observation. Several types of mammal traps were employed to sample species of small mammals. In the late summer and early fall of 1979, Sherman live traps (7.62 x 8.89 x 22.86 cm), Victor mouse and rat traps, and pitfalls (3 pound coffee cans) were used. In the summer of 1980 conibear kill traps were also utilized to add another dimension to the inventory. The trapping survey was designed to be inclusive of all observer-defined habitats. Traps were baited with either oatmeal or a mixture of oatmeal, peanut butter, and bacon grease, or sardines or chicken entrails. The traps were positioned at intervals of approximately 15 meters with one trap per station and were set for three consecutive nights. During the two years the trapping survey was conducted, a total of 2413 trap nights were accumulated.

A brief questionnaire concerning the abundance of several species of small mammals and reptiles was prepared and presented to residents of the immediate area and to local trappers and collectors who frequent the area. In most cases the data gathered by these methods were not used to determine presence or absence of a species but were used to supplement field data gathered during the period of study.

All specimens collected during the course of the study were deposited in the vertebrate collections of the Cleveland Museum of Natural History.

Results

During the period of this study 24 species of fishes, 26 species of amphibians and reptiles, 108 species of birds, and 24 species of mammals were recorded for the study area. An annotated list of the vertebrate species is presented in Table 1. It should be noted that the classification concerning relative abundance is a subjective judgment on the part of the primary investigator, and that the terms used are somewhat arbitrary. A particular classification would not necessarily indicate equal numbers of individuals when applied to different species. Certain designations of relative abundance, such as "rare," may be better listed as undetermined when based on only one or very few observations of the species, since the time and techniques employed in searching and sampling may not have been adequate to fully determine the relative abundance of the species. Nevertheless, the species presented in Table 1 provide baseline data for the study area and should be viewed in that respect. Undoubtedly in years to come additional species will be added to the species list for each vertebrate group, especially to the list of avian species.

TABLE 1

Annotated list of vertebrate species observed at Morgan Swamp,
Ashtabula County, Ohio, during 1979 and 1980

(FISH)

<i>Umbra limi</i>	Abundant in vegetation in many beaver ponds; occurs in some natural permanent ponds
<i>Esox americanus vermiculatus</i>	Common in beaver ponds, less common in slow-flowing parts of Crooked Creek
<i>Catostomus commersoni commersoni</i>	Common in deeper beaver ponds, less common in Crooked Creek
<i>Hypentelium nigricans</i>	Common in flowing portions of Crooked Creek
<i>Campostoma anomalum anomalum</i>	Common in Crooked Creek
<i>Ericymba buccata</i>	Uncommon, found only in Crooked Creek
<i>Notemigonus chrysoleucas</i>	Common to abundant in beaver ponds and deeper parts of Crooked Creek; one of the most frequently encountered species
<i>Pimephales notatus</i>	Common in beaver ponds and Crooked Creek
<i>Pimephales promelas</i>	Common in beaver ponds and Crooked Creek
<i>Rhinichthys atratulus meleagris</i>	Uncommon to common in swift-flowing parts of Crooked Creek
<i>Semotilus atromaculatus atromaculatus</i>	Common in most parts of Crooked Creek
<i>Ictalurus melas</i>	Common in deeper slow water of Crooked Creek, present in beaver ponds
<i>Ictalurus natalis</i>	Uncommon
<i>Culaea inconstans</i>	Common in dense stands of aquatic vegetation in beaver ponds
<i>Ambloplites rupestris rupestris</i>	Uncommon, found only in Crooked Creek

<i>Lepomis cyanellus</i>	Uncommon in beaver ponds, more frequent in Crooked Creek
<i>Lepomis gibosus</i>	Common in beaver ponds and Crooked Creek
<i>Lepomis macrochirus</i>	Common in beaver ponds and Crooked Creek
<i>Micropterus salmoides salmoides</i>	Only one capture, in Crooked Creek
<i>Etheostoma caeruleum</i>	Common in riffles of Crooked Creek
<i>Etheostoma flabellare flabellare</i>	Common in riffles of Crooked Creek
<i>Etheostoma nigrum nigrum</i>	Uncommon, found in slow-moving water of Crooked Creek
<i>Percina maculata</i>	Only one capture, in swiftly flowing section of Crooked Creek
(AMPHIBIANS)	
<i>Ambystoma maculatum</i>	Common in young secondary swamp forest; egg masses in natural permanent ponds
<i>Notophthalmus viridescens viridescens</i>	Uncommon, young secondary swamp forest, mature secondary swamp forest, ditch along Shaffer Road
<i>Hemidactylium scutatum</i>	Uncommon, young secondary swamp forest, edge of beaver ponds or natural permanent ponds
<i>Plethodon cinereus cinereus</i>	Uncommon to common in young secondary swamp forest, most common in mature secondary swamp forest
<i>Plethodon glutinosus glutinosus</i>	Rare, only one individual uncovered
<i>Bufo americanus americanus</i>	Common in young secondary swamp forest, mature secondary swamp forest, and beaver ponds and natural ponds in breeding season
<i>Hyla crucifer crucifer</i>	Abundant in young secondary swamp forest, mature secondary swamp forest, beaver ponds, and natural ponds
<i>Hyla versicolor versicolor</i>	Common in young secondary swamp forest, mature secondary swamp forest, beaver ponds, and natural ponds

TABLE 1 (continued)

Annotated list of vertebrate species observed at Morgan Swamp,
Ashtabula County, Ohio, during 1979 and 1980

<i>Rana catesbeiana</i>	Common around swamp, larger beaver ponds, and natural permanent ponds; uncommon along Crooked Creek
<i>Rana clamitans melanota</i>	Abundant in swamp, beaver ponds, and natural ponds; in young secondary swamp forest; and swamp area in secondary mature swamp forest
<i>Rana pipiens pipiens</i>	Uncommon to common along ditches and in old fields
<i>Rana sylvatica</i>	Uncommon in young secondary swamp forest (mostly confined to ravines with intermittent streams); common throughout mature secondary swamp forest
(REPTILES)	
* <i>Eumeces fasciatus</i>	Rare, in dry upland area of young secondary swamp forest; one individual observed
<i>Diadophis punctatus edwardsi</i>	Common; all individuals found under demolished building
*** <i>Coluber constrictor constrictor</i>	Common; under demolished building, old fields
<i>Elaphe obsoleta obsoleta</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Lampropeltis triangulum triangulum</i>	Common; all individuals observed under demolished building
<i>Nerodia sipedon sipedon</i>	Common to abundant; demolished building, swamp, beaver ponds, natural ponds, Crooked Creek
* <i>Storeria dekayi dekayi</i>	Common
* <i>Storeria occipitomaculata occipitomaculata</i>	Common
<i>Thamnophis sauritus sauritus</i>	Common in swamp, borders of beaver ponds and natural ponds,

	Crooked Creek, young secondary swamp forest, mature secondary swamp forest
<i>Thamnophis sirtalis sirtalis</i>	Common in swamp, demolished building, borders of beaver ponds and natural ponds, Crooked Creek, young secondary swamp forest, old field, and mature secondary swamp forest
* <i>Sistrurus catenatus catenatus</i>	See discussion
<i>Chelydra serpentina serpentina</i>	Common; swamp, beaver ponds
<i>Clemmys guttata</i>	Rare, only one individual found; see discussion
<i>Chrysemys picta marginata</i>	Common; beaver ponds, swamp
(BIRDS)	
<i>Ardea herodias herodias</i>	Common; swamp, beaver ponds
<i>Botaurus lentiginosus</i>	Uncommon; swamp, beaver ponds
<i>Branta canadensis canadensis</i>	Common; swamp, beaver ponds, agricultural fields
<i>Anas platyrhynchos platyrhynchos</i>	Common; swamp, beaver ponds
<i>Anas discors</i>	Common; swamp, beaver ponds, natural permanent ponds
<i>Aix sponsa</i>	Common; swamp, beaver ponds, natural permanent ponds
** <i>Lophodytes cucullatus</i>	Rare; one (1) nesting record
<i>Cathartes aura septentrionalis</i>	Common; overhead flights
<i>Accipiter cooperii</i>	Uncommon
<i>Buteo jamaicensis borealis</i>	Common; overhead flights
<i>Buteo lineatus lineatus</i>	Common; overhead flights
<i>Buteo platypterus platypterus</i>	Uncommon; overhead flights
<i>Falco sparverius sparverius</i>	Common; old field, along roadsides
<i>Bonasa umbellus monticola</i>	Common to abundant in young secondary swamp forest; less common in mature secondary swamp forest
<i>Charadrius vociferus vociferus</i>	Uncommon; agricultural fields
<i>Philohela minor</i>	Uncommon to common; edge of beaver ponds, swamp, young secondary swamp forest
<i>Zenaida macroura carolinensis</i>	Common; old field, along roads

TABLE 1 (continued)

Annotated list of vertebrate species observed at Morgan Swamp,
Ashtabula County, Ohio, during 1979 and 1980

<i>Columba liva</i>	Uncommon; vicinity of human dwellings
<i>Coccyzus erythrophthalmus</i>	Common; young secondary swamp forest, forested pond edges
<i>Bubo virginianus virginianus</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Strix varia varia</i>	Common; young secondary swamp forest, mature swamp forest
<i>Chordeiles minor</i>	Common; flights over swamp, beaver ponds
<i>Chaetura pelagica</i>	Rare; only one observation
<i>Archilochus colubris</i>	Common; young secondary swamp forest, mature secondary swamp forest, swamp, pond edges
<i>Megacerle alcyon alcyon</i>	Common; beaver ponds, swamp
<i>Colaptes auratus luteus</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Dryocopus pileatus</i>	Rare to uncommon; holes evident, only one observation
<i>Melanerpes carolinus zebra</i>	Common; young secondary swamp forest, mature secondary swamp forest, standing dead trees in swamp and beaver ponds
<i>Melanerpes erythrocephalus</i>	Common; mature secondary swamp forest, young secondary swamp forest, standing dead trees in swamp and beaver ponds
* <i>Sphyrapicus varius varius</i>	Rare; one observation of two birds
<i>Picoides villosus villosus</i>	Common, mature secondary swamp forest, young secondary swamp forest, standing trees in swamp, and beaver ponds
<i>Picoides pubescens medianus</i>	Common; mature secondary swamp forest, young secondary swamp

	forest, standing trees in swamp, and beaver ponds
<i>Tyrannus tyrannus</i>	Common; old field, swamp, beaver ponds, along roads
<i>Myiarchus crinitus boreus</i>	Very common; mature secondary swamp forest, young secondary swamp forest, forests along pond edges
<i>Sayornis phoebe</i>	Common; young secondary swamp forest, beaver ponds
<i>Empidonax virescens</i>	Common; mature secondary swamp forest, young secondary swamp forest
<i>Empidonax minimus</i>	Uncommon; young secondary swamp forest, mature secondary swamp forest
<i>Contopus virens</i>	Common; mature secondary swamp forest
<i>Nuttallornis borealis</i>	Rare; one individual observed
<i>Eremophila alpestris</i>	Common; agricultural fields
<i>Iridoprocne bicolor</i>	Common; swamp, young secondary swamp forest, beaver ponds
<i>Stelgidopteryx rufficollis serripennis</i>	Rare; one individual observed
<i>Hirundo rustica erythrogaster</i>	Common; old field, swamp, beaver ponds, around dwellings
<i>Pronges subis subis</i>	Common; swamp, beaver ponds
<i>Cyanocitta cristata bromia</i>	Very common; young secondary swamp forest, mature secondary swamp forest, beaver ponds
<i>Corvus brachyrhynchos brachyrhynchos</i>	Common; old field, in flight over all areas
<i>Parus atricapillus</i>	Common; young secondary swamp forest, mature secondary swamp forest, borders of swamp, beaver ponds
<i>Parus bicolor</i>	Common; young secondary swamp forest, mature secondary swamp forest, borders of swamp, beaver ponds

TABLE 1 (continued)

Annotated list of vertebrate species observed at Morgan Swamp,
Ashtabula County, Ohio, during 1979 and 1980

<i>Sitta carolinensis cookei</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Troglodytes aedon</i>	Common; young secondary swamp forest, borders of swamp, beaver ponds
<i>Dumetella carolinensis</i>	Common; young secondary swamp forest, borders of swamp, beaver ponds
<i>Toxostoma rufum rufum</i>	Uncommon; borders of young secondary swamp forest, beaver ponds, swamp
<i>Turdus migratorius migratorius</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Hylocichla mustelina</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Catharus guttatus faxoni</i>	Common; young secondary swamp forest, mature secondary swamp forest, borders of swamp
<i>Catharus ustulatus swainsoni</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Catharus fuscescens fuscescens</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Sialia sialis sialis</i>	Common; old field, along roads, beaver ponds, young secondary swamp forest, (in migration)
<i>Polioptila caerulea caerulea</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Regulus calendula calendula</i>	Common; young secondary swamp forest, mature secondary swamp forest

	forest, borders of swamp and beaver ponds
<i>Bombycilla cedrorum</i>	Common; young secondary swamp forest, beaver ponds, swamp
<i>Sturnus vulgaris</i>	Common; along roads, human dwellings
<i>Vireo griseus</i>	Rare; one individual observed
<i>Vireo flavifrons</i>	Uncommon; young secondary swamp forest, beaver ponds, swamp
<i>Vireo olivaceus</i>	Very common; young secondary swamp forest, mature secondary swamp forest, beaver ponds
<i>Vireo philadelphicus</i>	Rare; one individual observed
<i>Vireo gilvus gilvus</i>	Uncommon; mature secondary swamp forest, young secondary swamp forest
<i>Vermivora lawrencei</i>	Rare; one individual observed
<i>Vermivora pinus</i>	Very common; young secondary swamp forest, borders of swamp, beaver ponds
<i>Vermivora peregrina</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Vermivora ruficapilla ruficapilla</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Dendroica petechia aestiva</i>	Very common; young secondary swamp forest, borders of swamp, beaver ponds
<i>Dendroica magnolia</i>	Common; young secondary swamp forest, borders of swamp, beaver ponds
<i>Dendroica tigrina</i>	Uncommon; young secondary swamp forest
<i>Dendroica coronata coronata</i>	Abundant in migration; young secondary swamp forest, mature secondary swamp forest, borders of swamp, beaver ponds
<i>Dendroica virens virens</i>	Common; young secondary swamp

TABLE 1 (continued)

Annotated list of vertebrate species observed at Morgan Swamp,
Ashtabula County, Ohio, during 1979 and 1980

	forest, mature secondary swamp forest
<i>Dendroica cerulea</i>	Uncommon; mature secondary swamp forest
<i>Dendroica fusca</i>	Common; mature secondary swamp forest, young secondary swamp forest
<i>Dendroica pensylvanica</i>	Common; young secondary swamp forest
<i>Dendroica castanea</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Seiurus aurocapillus</i>	Common; mature secondary swamp forest, young secondary swamp forest
<i>Geothlypis trichas</i>	Very common; young secondary swamp forest, swamp borders of beaver ponds
<i>Icteria virens</i>	Rare; one individual observed
<i>Wilsonia pusilla pusilla</i>	Rare; one individual observed
<i>Wilsonia canadensis</i>	Uncommon; young secondary swamp forest
<i>Passer domesticus</i>	Absent from all areas except roads and near human dwellings
<i>Dolichonyx oryzivorus</i>	Common; old field
<i>Sturnella magna magna</i>	Common; old field, along roads
<i>Agelaius phoeniceus phoeniceus</i>	Common; swamp, beaver ponds, old field
<i>Icterus spurius</i>	Rare; one individual observed
<i>Icterus galbula</i>	Very common; young secondary swamp forest, mature secondary swamp forest, swamp
<i>Quiscalus quiscula versicolor</i>	Common; young secondary swamp forest, beaver ponds, swamp
<i>Molothrus ater ater</i>	Common; swamp, beaver ponds,

	young secondary swamp forest, mature secondary swamp forest, old field
<i>Piranga olivacea</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Cardinalis cardinalis cardinalis</i>	Common; young secondary swamp forest, mature secondary swamp forest, borders of beaver ponds, swamp
<i>Pheucticus ludovicianus</i>	Very common; young secondary swamp forest, mature secondary swamp forest
<i>Passerina cyanea</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Carpodacus purpureus</i> <i>purpureus</i>	Rare; one individual observed
<i>Carduelis tristis tristis</i>	Very common; young secondary swamp forest, old field
<i>Pipilo erythrophthalmus</i>	Common; young secondary swamp forest, field-forest ecotone
<i>Passerculus sandwichensis</i> <i>savanna</i>	Uncommon; old field, farm lands
<i>Junco hyemalis hyemalis</i>	Common; old field, young secondary swamp forest, mature secondary swamp forest, beaver ponds
<i>Spizella pusilla pusilla</i>	Common; old field, farm lands
<i>Zonotrichia leucophrys</i> <i>leucophrys</i>	Rare; one individual observed
<i>Zonotrichia albicollis</i>	Uncommon to common; young secondary swamp forest
<i>Melospiza georgiana georgiana</i>	Very common; swamp, beaver ponds
<i>Melospiza melodia</i>	Very common; young secondary swamp forest, swamp, beaver ponds, old field, farm lands
(MAMMALS)	
<i>Didelphis marsupialis virginiana</i>	Common; young secondary swamp

TABLE 1 (continued)
Annotated list of vertebrate species observed at Morgan Swamp,
Ashtabula County, Ohio, during 1979 and 1980

<i>Sorex cinereus ohioensis</i>	forest, mature secondary swamp forest, old field, farm lands Common; mature secondary swamp forest, young secondary swamp forest
<i>Blarina brevicauda kirtlandi</i>	Very common to abundant; old field, mature secondary swamp forest, swamp, beaver ponds, young secondary swamp forest
<i>Condylura cristata cristata</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Procyon lotor lotor</i>	Common; old field, mature secondary swamp forest, young secondary swamp forest, swamp, beaver ponds
* <i>Mustela vison mink</i>	Common; swamp, young secondary swamp forest
<i>Mustela erminea cicognanii</i>	Rare; one individual captured
* <i>Mephitis mephitis nigra</i>	Uncommon; old field, mature secondary swamp forest, young secondary swamp forest
* <i>Vulpes fulva fulva</i>	More common than <i>Urocyon</i>
* <i>Urocyon cinereoargenteus cinereoargenteus</i>	Less common than <i>Vulpes</i>
<i>Marmota monax rufescens</i>	Common; old field, young secondary swamp forest, mature secondary swamp forest
<i>Tamias striatus rufescens</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Tamiasciurus hudsonicus loquax</i>	Common; young secondary swamp forest, mature secondary swamp forest
<i>Sciurus niger rufiventer</i>	Common; young secondary swamp forest, mature secondary swamp forest

<i>Glaucomys volans volans</i>	Rare; one individual observed
<i>Castor canadensis canadensis</i>	Common; beaver ponds, swamp, young secondary swamp forest
<i>Peromyscus leucopus noveboracensis</i>	Abundant; young secondary swamp forest, mature secondary swamp forest, swamp, old field
<i>Microtus pennsylvanicus pennsylvanicus</i>	Common; old field, swamp, beaver ponds
<i>Ondatra zibethicus zibethicus</i>	Common; swamp, beaver ponds
<i>Mus musculus</i>	Rare in wild, common around dwellings
* <i>Rattus norvegicus</i>	Common around dwellings; no captures
<i>Zapus hudsonius americanus</i>	Common; young secondary swamp forest, old field fence row
<i>Sylvilagus floridana mearnsii</i>	Uncommon; old field, young secondary swamp forest
<i>Odocoileus virginianus borealis</i>	Common; young secondary swamp forest, mature secondary swamp forest, old field

*Based only upon questionnaire data or personal communication.

**No individuals were observed during the 1979-1980 study. However, a nesting record consisting of one egg found in 1967 exists in the ornithology collection of the Ohio State University (Trautman, 1980, personal communication).

***Although no intergrades (*Coluber c. constrictor* x *C. c. foxi*) were observed during the study, intergrades have been captured within the study area (Strong, personal communication).

Discussion

Several of the vertebrate species listed in Table 1 are of particular importance at this point in time to the fauna of Ohio because of their status within the state. The following vertebrate species are listed by the Ohio Biological Survey (OBS) or the Ohio Division of Wildlife (ODW) as either being threatened (T) or endangered (E) with extinction within the state: *Hemidactylium scutatum* (E, OBS, ODW), *Clemmys guttata* (E, OBS, ODW), and *Sistrurus catenatus* (T, OBS). Four *Hemidactylium scutatum* were found in the youthful secondary swamp forest, usually near beaver ponds or other permanent ponds under bark of saturated logs not necessarily associated with *Sphagnum* or other mosses. One specimen was uncovered under a large log near the top of a ravine on a comparatively dry site.

Only one *Clemmys guttata* was observed in the field. The specimen was discovered dead and in a state of decay. However, based upon the results of a questionnaire submitted to several residents and trappers in the area (Froncek, 1980), the species may be more common than the field observations indicate.

The presence of *Sistrurus catenatus* cannot be explicitly determined from this survey. During the two years that field data were gathered, no *Sistrurus* individuals were encountered. On several occasions specific locations were searched extensively and unsuccessfully for the species. However, corroborating data from the questionnaire indicate that the species apparently does inhabit the Morgan Swamp (Froncek, 1980; Oehlenschlager, 1980; Strong, 1980; Kumpulainen, 1980; personal communications).

In August 1980 a single specimen of *Mustela erminea* was captured in the swamp-forest ecotone. The status of this species in Ohio is currently undetermined. In recent years several specimens have been taken in nearby areas of Ashtabula County and adjacent Lake County (Case, 1980; Welch, 1980; personal communications). This species, based on the data available for Morgan Swamp, probably should be listed as rare.

Acknowledgments

I wish to express my gratitude to Anne Van Sweringen and Dale Preston for their assistance in gathering field data. I extend my appreciation to Harold Mahan, James Bissell, and Robert Segedi for critically reviewing the manuscript. Appreciation is also extended to Carole Camillo for typing the paper.

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